A NEW SPECIES OF *PACKERA* (ASTERACEAE: SENECIONEAE) FROM THE EDWARDS PLATEAU OF TEXAS

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ABSTRACT

Packera texensis, sp. nov., is described and illustrated. It is endemic to the granitic sands of the Central Mineral Region within the Edwards Plateau of central Texas where it is known from four counties.

RESUMEN

Se describe y se ilustra ***Packera texensis***, sp. nov. Es endémica de las arenas graníticas de la "Central Mineral Region" en la Meseta Edwards del centro de Texas, de donde se conoce en cuatro condados.

INTRODUCTION

Packera is a genus of 63 species that occur almost exclusively in North America and that have been treated historically as the "Aureoid" complex of the genus *Senecio*. Löve and Löve (1976) pointed out that this anomalous group of species has a chromosome base number of x = 22 or x = 23, unlike other members of *Senecio* which are characterized by having a number of x = 10. They proposed that Barkley's "Aureoid Senecios" be placed in a new genus, *Packera*, based primarily on gross morphology and chromosome number. The group has notably imprecise species boundaries and a complex taxonomic history (Bain 1988; Barkley 1962, 1963, 1968a, 1968b, 1978, 1980, 1988; Freeman & Barkley 1995; Kowal 1975; Packer 1972). During field work in central Texas, a species of *Packera* has been discovered that is distinct from others currently known.

DESCRIPTION

Packera texensis R.J. O'Kennon & D.K. Trock, sp. nov. (**Fig. 1**). TYPE: U.S.A. TEXAS. GILLESPIE CO.: Keese Road, 0.7 mi (11 km) N of Keese-Sagebeil Road, ca. 18 mi (29 km) N of Fredericksburg, in soils derived from weathered granite and among granite boulders, 1720 ft (524 m), 5 Mar 2000, *R.J. O'Kennon & D.K. Trock 11059* (HOLOTYPE: BRIT; ISOTYPES: MEX, MSC, NY, TAES).

Propter laminas 1.5–4 cm latas lobis terminalibus grandibus, denique petiolos distinguibiles a *P. plattensis* arcte similans, sed am ca laminarum lateralibus irregularibus (non dentatis vel laceratis), caudice usque ad 5 mm (non 1–1.2) cm diametre, flosculis radii 13 (non 8), nec non habitu pereni (non bieni) prae clare distat.

Robust herbaceous perennial, arising from an erect woody taproot-like caudex 6–12 mm thick, glabrous to sparingly floccose about nodes and among heads of

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FIG. 1. Habit and floral details of *Packera texensis* (from holotype, BRIT).

capitulescence. Stems 2–4(–5) dm, single or 2–5, rarely in clusters of up to 20. Basal leaves petiolate, blades elliptic-ovate, broadly oblanceolate or lyrate, bases tapering, margins irregularly and deeply parted to irregularly lobed with 3–9 lobes on each side and again incised at apex, 4–7 cm long and 1.5–2.5 cm wide, usually about 2 times longer than wide, the petiole subequal to the blade; cauline leaves gradually or sometimes abruptly reduced distally, similar in aspect to the basal leaves. Capitulescence an open or congested corymbiform cyme of 4–20(–30) heads. Capitula campanulate; phyllaries 13 or 21, 5–7 mm long. Ray florets conspicuous, golden-yellow, ca. 13 in number, ligule 7–9(–10) mm long. Cypselae, 2.5–3.0 mm long, 0.5 mm wide, with thick appressed simple trichomes along the angles, pappi 5–7 mm long.

Habitat and Phenology.—Gillespie County lies on the northern boundary of the Balcones Canyonlands Association, an area of limestone plateaus deeply dissected by creeks and rivers on the Edwards Plateau. The county is on the southern boundary of the Llano Uplift or Central Mineral Region, where the soil is primarily made up of granite, sandstone, gneiss, schist, and granitic-derived sands. The Edwards Plateau is botanically well known and has long been recognized as a region of endemism (Correll & Johnston 1979).

Recent collections of *Packera texensis* were made in an area of dry granitic gruss near the boundary of Gillespie and Llano counties. The plants are site specific and relatively uncommon, and the species is currently known from only a few localities. *Packera texensis* arises quickly from evergreen winter rosettes during the January rains and blooms as early as the first week in February. Plants begin to senesce by the end of March during a rapid drying out of the substrate prior to the spring rainy season that beings in late April.

Additional collections examined: U.S.A. **TEXAS. Callahan Co.:** I-20 (old Rt. 80) frontage road N side, 1 km E of County Road CR 115, 15 Apr 2002, *R.J. O'Kennon 16020* (BRIT); 3 mi S of Eula along Hwy 603, 20 Mar 1963, *N.C. Henderson 63-45* (BRIT); 2 mi E of Clyde along Hwy 80, sandy roadside, 8 Apr 1962, *N.C. Henderson 62-67* (BRIT). **Gillespie Co.:** 3.5 mi N of Eckert on Hwy 16, 17 Mar 1964, *D.S. Correll 29037* (BRIT); Keese Road, 0.7 mi (11 km) N of Keese-Sagebeil Road, ca. 18 mi (29 km) N of Fredericksburg, decaying granitic gruss soils among granite boulders, 1720 ft (524 m), 20 Mar 1990, *R.J. O'Kennon 6577* (BRIT); 26 Feb 1991, *R.J. O'Kennon 8373* (BRIT); old Llano Road N of Fredericksburg, 21 Feb 1931, *E. Whitehouse 12050* (BRIT). **Llano Co.:** Enchanted Rock, granitic soil, partial shade, 18 Apr 1931, *E. Whitehouse 12054* (BRIT). **Mason Co.:** 1 mi S of Katemcy, granite outcrop, 5 Apr 1984, *S. Pence 82* (BRIT).

DISCUSSION

Packera texensis most closely resembles *P. tridenticulata* (Rydb.) W.A. Weber & A. Löve but it shares characteristics of *P. tampicana* (DC) C. Jeffrey as well as *P. plattensis* (Nutt.) W.A. Weber & Löve. Most specimens would key to *Senecio tridenticulata* (Rydb.) in Correll and Johnston's *Manual of the Vascular Plants of Texas* (1979). Some of the more pubescent specimens would key to *Senecio plattensis* (Nutt.).

Morphologically the new species differs from *P. tridenticulata* mainly in height, shape and size of leaves, leaf margins, ratio of petiole length to blade length, length of phyllaries, length and pubescence of achenes. It differs from *P. plattensis* in number of stems, type of perennating structures, amount of location of pubescence, number of ray florets, length of ligules, length and pubescence of achenes. It differs from *P. tampicana* in duration, number of stems, pubescence, overall leaf shape and degree of lobing of the margins, and number of ray florets. Characters useful in recognizing these species are listed in Table 1. Data in this table were obtained by the senior author from measurements made on dozens of herbarium specimens.

There are three other species of *Packera* in Texas, *P. glabella*, *P. obovata* and *P. tomentosa*. There is little likelihood that any of these species could be mistaken for *P. texensis*. *Packera glabella* has distinctly striated hollow stems, a short fibrous-rooted caudex, and leaves with margins pinnately lobed. *Packera ovobata* has abundant stolens, a rhizomatous caudex, and distinctly obovate leaves and *P. tomentosa* has persistent floccose pubescence covering all of the vegetative surfaces. In contrast to these three species *P. texensis* lacks the hollow striated stems, has a distinctly tap-rooted caudex, no stolons, leaves that are elliptic-ovate to oblanceolate with margins that are at most irregularly lobed and pubescence restricted to the leaf axils, lower petioles and inflorescence.

There are habitat and substrate preferences that may also be used to distinguish these four species. *Packera texensis* has been collected only on or near the Edwards Plateau in soils derived from igneous or metamorphosed igneous rocks such as granite, gneiss and schists. *Packera plattensis* has been collected from a wide variety of soil types, but is most abundant in the limestone and sandstone-derived soils of the Great Plains. *Packera tridenticulata* is a plant of the High Plains and foothills of the Rocky Mountains, while *P. tampicana* is always found in disturbed wet sandy or muddy sites. Distribution maps for the four species are provided in Figure 2.

Hybridization is apparently common in this genus, but there is no evidence that *P. texensis* hybridizes with any of its congeners. It is consistently distinct in morphology, habitat and substrate preference, and flowering phenologies. There is also good distributional data to support the recognition of the new species. Additional field and laboratory studies will undoubtedly contribute to our understanding of the relationship of *P. texensis* to other morphologically similar species.

KEY TO *PACKERA TEXENSIS* AND ITS IMMEDIATE ALLIES

1. Plants permanently floccose-tomentose at the base of the stem and in the axils of the leaves, lightly tomentose elsewhere _____ **P. plattensis**
1. Plants with light tomentum at the base of the stem and in leaf axils, glabrous elsewhere.

TABLE 1. Comparison of *Packera texensis* with selected congeners.

	P. texensis	**P. tridenticulata**	**P. plattensis**	**P. tampicana**
Duration and habit	Perennial, woody caudex, 4–12 mm thick, no stolons	Perennial, caudex, 2–4 mm thick, terminally branching taproot,	Biennial or perennial from erect or suberect caudex, may be stoloniferous	Annual from a slender taproot
Height	3–4(–5) dm	1–3(–4) dm	2–6(–7) dm	2–5(–6) dm
Number of stems	Single to several	Single to several	Usually single, rarely 2–3	Usually single, or rarely 2–6 clustered
Pubescence	Glabrous to lightly floccose near nodes and among capitula	Glabrous to lightly floccose near nodes	Floccose-tomentose at base of stem, in nodes, abaxial leaf surface and among capitula	Glabrous throughout
Leaf dimensions	Blades 4–8(–10) cm long, 1.5–2.5 cm wide	Blades 2–4(–5) cm long, 0.5–1.5 cm wide	Blades 2–7(–8) cm long, 1–3(–4) cm wide	Blades 4–12 cm long, 1–3(–4) cm wide
Petiole to blade ratio	Petioles subequal to blade	1–2 times longer than blade	1–1.5 times longer than blade	Petioles subequal to blade
Leaf blade shape	Elliptic-ovate to broadly oblanceolate	Lanceolate to narrowly oblanceoate	Elliptic-ovate to oblanceo-late or rarely suborbicular	Oblanceolate to spatulate
Leaf margins	Irregularly incised or dissected to deeply parted or pinnatisect, occasionally lateral margins irregularly lobed	Entire, subentire or dentate near the apex, rarely sub-pinnatisect	Subentire to crenate, serrate-dentate or sublyrate	Deeply pinnate, 1–6 pairs of lateral lobes, large terminal lobes
Capitulescence	4–20(–30) capitula	4–12(–20) capitula	6–15(–20) capitula	4–15(–20) capitula
Phyllaries	13 or 21, 5–7 mm long, green, glabrous	13 or 21, 6–10 mm, green, sparsely tomentose proximally	13 or 21, 5–6 mm, green, densely tomentose proximally	13 or 21, 3–7 mm, green with reddish apices, glabrous
Ray florets	About 13	8–10, rarely 13	About 8	8 or 13
Ligule length	5–6(–7) mm	5–8(–9) mm	9–10(–11) mm	3–7 mm
Cypselae	1–1.5 mm long, thick appressed trichomes on the angles	1.5–2.5 mm long, glabrous or lightly hirtellous on the angles	1.5–2.5 mm, hirtellous on the angles or rarely glabrous	1–1.5 mm long, hirtellous on the angles

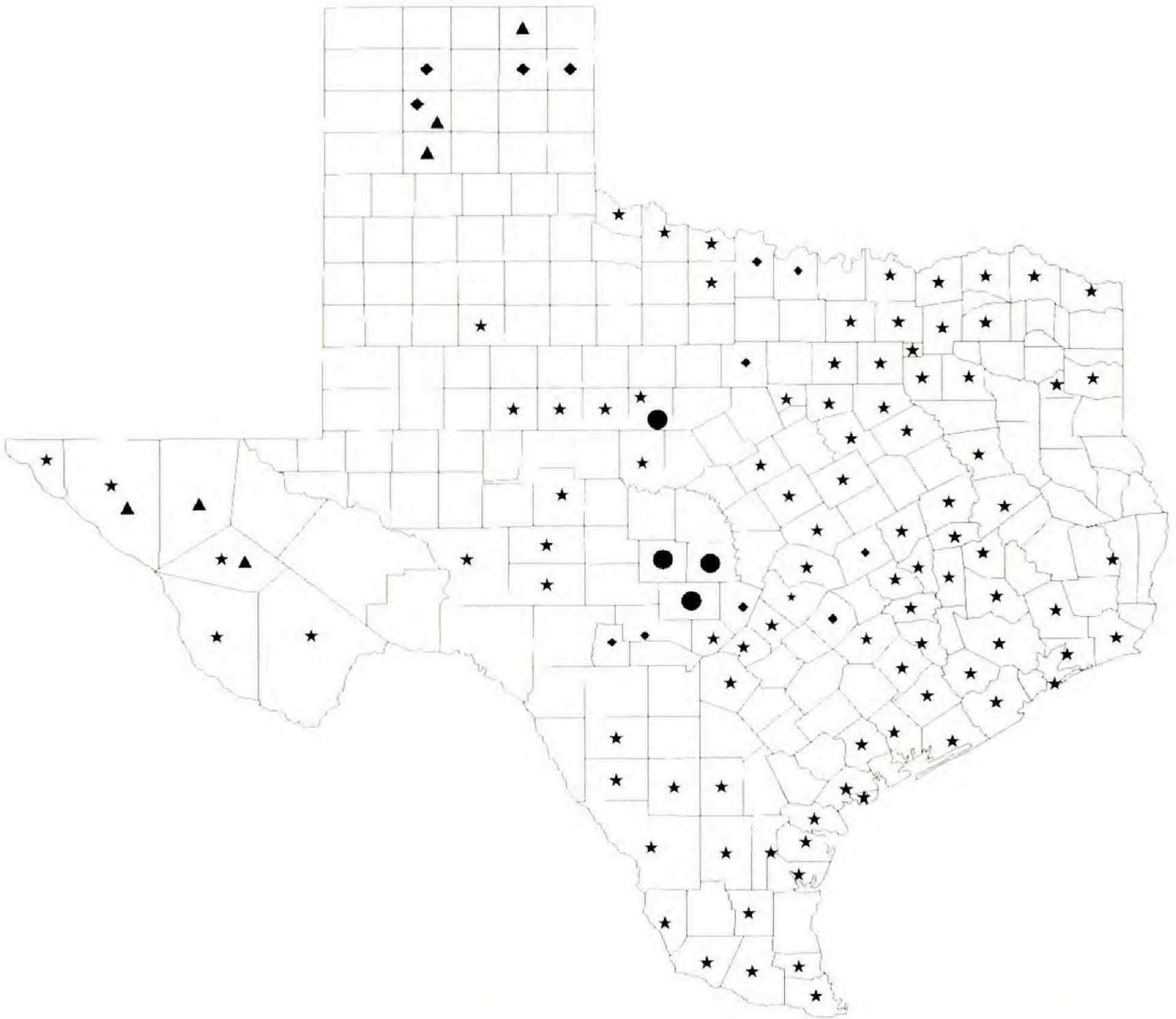

FIG. 2. Geographic distribution of four morphologically similar species of *Packera* in Texas. Circles = *P. texensis*; triangles = *P. tridenticulata*; diamonds = *P. plattensis*; stars = *P. tampicana*. Distributions are based on examination of over 300 herbarium specimens.

2. Basal leaves lanceolate or narrowly oblanceolate, margins entire, subentire to dentate near the apex or occasionally sub-pinnatisect _____ **P. tridenticulata**
2. Basal leaves elliptic-ovate, obovate or lyrate, margins lobed, parted or deeply incised.
   3. Annual, from a slender taproot _____ **P. tampicana**
   3. Perennial, from a stout, woody tap rooted caudex _____ **P. texensis**

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